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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/641,705	08/15/2003	Can Erkey	UCT-0037	9966

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EXAMINER

WITHERSPOON, SIKARI, A

ART UNIT PAPER NUMBER

1621

DATE MAILED: 07/02/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

<p align="center">Office Action Summary</p>	<p>Application No.</p> <p align="center">10/641,705</p>	<p>Applicant(s)</p> <p align="center">ERKEY ET AL.</p>	
	<p>Examiner</p> <p align="center">Sikarl A. Witherspoon</p>	<p>Art Unit</p> <p align="center">1621</p>	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 26 January 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-35 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 35 is/are allowed.
- 6) ☒ Claim(s) 1-16, 19-26 and 28-34 is/are rejected.
- 7) ☒ Claim(s) 17, 18 and 27 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 15 August 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date <u>2</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-16, 19-26 and 28-34 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tinucci et al (US 4,996,366) and Randolph (US 5,814,678) in combination.

The instant claims are drawn to a catalytic process which comprises the reaction of a reactant with an organometallic catalyst to form a product in a microemulsion, said microemulsion comprising the reactant, catalyst, and further comprising water, a densified fluid, and a surfactant. Further limitations include the reactant comprising olefinic unsaturation, the organometallic catalyst comprising rhodium, the surfactant comprising a perhalogenated surfactant, a propylene glycol surfactant, a perhaloether or polydimethylsiloxane surfactant, and the catalyzed reaction being a hydroformylation. The densified fluid is a supercritical fluid having a critical temperature of less than or equal to 31° C.

Tinucci et al teach a process for the catalytic hydroformylation of olefins, wherein the process is carried out by operating in a liquid, aqueous-organic reaction medium, in the presence of a water-soluble complex catalyst, wherein said aqueous-organic medium is in the form of a microemulsion constituted by an oil phase, an aqueous

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phase, a surfactant and co-surfactant (see abstract). The microemulsion has particle sizes in the range of 75 to 1,200 Å (7.5 to 120 nm) (col. 2, lines 25-34). The catalyst is a water-soluble catalyst comprising a metal, i.e., rhodium, cobalt, platinum, etc., and a phosphinic ligand (col. 3, lines 13-56). The surfactants used in the process are anionic surfactants such as carboxylates, sulfonates, and sulfates of alkali-metals, or of ammonium; nonionic surfactants that may be used include alcohol ethoxylates, esters of glycerol, polyoxyethylene esters, glycol esters of fatty acids, etc (col. 4, lines 1-37). Solvents such as butanol and n-dodecene are also added to the reaction and become part of the microemulsion (col. 6, lines 25-40).

The difference between Tinucci et al and the present invention is that Tinucci et al do not teach the microemulsion further comprising a densified (supercritical) fluid, as claimed herein. However, Randolph teaches, and as such, it is known that chemical reactions in microemulsion systems are enhanced in the presence of supercritical carbon dioxide, which has a critical temperature of 31° C and a critical pressure of 73.8 bar (7.38 mPa); see abstract and col. 1, lines 20-32).

It therefore would have been obvious to a person of ordinary skill in the art, at the time the present invention was made, to combine Randolph's express teaching of conducting chemical reactions in water-in carbon dioxide microemulsions with the catalytic hydroformylation process taught by Tinucci et al. A person of ordinary skill in the art would have been motivated to combine such teachings by the reasonable expectation of having the ability to control reaction rates, and ultimately the yield of hydroformylation product produced by Tinuccis' process. This expectation would have

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been mitigated on the fact that Randolph expressly teaches that advantages of regulating reactions in microemulsions in supercritical carbon dioxide include the speed with which pressure can be changed, which allows for stoppage of a reaction very quickly without significant residual activity (see abstract and col. 2, lines 10-30).

Allowable Subject Matter

Claims 17, 18 and 28 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The following is a statement of reasons for the indication of allowable subject matter: claim 35 is drawn to a hydroformylation process of which no prior art has been found at this time.


Any inquiry concerning this communication or earlier communications from the examiner should be directed to Sikarl A. Witherspoon whose telephone number is 571-272-0649. The examiner can normally be reached on M-F 8:30-6:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Johann Richter can be reached on 571-272-0646. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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